

What is claimed is:

1. A vertical handoff system comprising:

a first foreign agent providing connectivity to a network, the first foreign agent broadcasting a wireless local area network signal;

a second foreign agent providing connectivity to the network via a wireless wide area network signal;

a mobile node comprising executable code for performing a vertical handoff between the first foreign agent and the second foreign agent; and

a home agent routing information to the mobile node through one of the first foreign agent and the second foreign agent according to an established connection of the mobile node.

2. The vertical handoff system of claim 1, wherein the mobile node further comprises a signal strength monitor.

3. The vertical handoff system of claim 1, wherein the mobile node comprises a buffer for caching information received through the first foreign agent prior to establishing a connection with the second foreign agent.

4. The vertical handoff system of claim 1, wherein the

second foreign agent comprises a buffer for caching
information to be transmitted to the mobile node.

5. The vertical handoff system of claim 1, wherein the
5 home agent comprises a router for routing information
transmitted from the mobile node.

6. The vertical handoff system of claim 1, wherein the
executable code for performing the vertical handoff
10 comprises:

a link status monitor for monitoring a signal strength
of the wireless local area network signal; and

a communication daemon for initiating the vertical
handoff upon determining the signal strength to be
15 undesirable and for establishing connectivity between a
mobile internet protocol module of the mobile node and the
second foreign agent.

7. The vertical handoff system of claim 1, wherein the
20 wireless local area network connects wirelessly to the
mobile node via radio frequency electromagnetic airwaves.

8. The vertical handoff system of claim 1, wherein the
wireless wide area network connects wirelessly to the

mobile node via one of Code Division Multiple Access,
Global System for Mobile Communications, General Packet
Radio Service, Enhanced Data rate for Global Evolution or
Wideband Code Division Multiple Access.

5

9. A vertical handoff method comprising:

establishing a network connection to a network host
via a wireless local area network;

determining a strength of the wireless local area
10 network connection to be at or below a threshold strength;
and

moving, seamlessly, the network connection to a
wireless wide area network.

15 10. The method of claim 9, wherein the transition is
transparent to a user and a remote end of the network
connection.

11. The method of claim 9, wherein moving comprises
20 buffering packets at a home agent and pacing packets sent
to a mobile node, wherein the network connection exists
between the home agent and the mobile node.

12. A method for vertical handoff in a wireless network

vertical comprising:

monitoring a wireless local area network signal
carrying an active network connection;

initiating vertical handoff to a wireless wide area
5 network signal upon determining that the wireless local
area network signal is undesirable;

tunneling the active network connection over the
wireless wide area network signal; and

caching and replaying information over the wireless
10 wide area network signal.

13. The method of claim 12, wherein initiating the
vertical handoff comprises establishing a wireless wide
area network connection to a mobile node.

15

14. The method of claim 12, wherein initiating the
vertical handoff comprises caching information received by
a mobile node over the wireless local area network signal.

20

15. The method of claim 14, wherein the caching of
information received over the wireless local area network
is performed before a wireless wide area network connection
is established.

16. The method of claim 13, further comprising determining whether a second wireless local area network signal is desirable prior to initiating the vertical handoff.

5 17. The method of claim 16, further comprising initiating a horizontal handoff upon determining that the second wireless local area network signal is desirable.

18. The method of claim 13, further comprising initiating
10 vertical handoff from the wireless wide area network signal to the wireless local area network signal upon determining that the wireless local area network signal is desirable.

19. The method of claim 13, wherein desirability
15 corresponds to a threshold for measuring strength of a wireless signal.

20. The method of claim 13, wherein tunneling comprises redirecting a signal of a client side mobile internet
20 protocol implementation from the wireless local area network signal to the wireless wide area network signal.

21. The method of claim 13, wherein tunneling comprises providing a communication agent using a protocol to talk to home agent and mobile node.

5 22. The method of claim 13, wherein tunneling comprises:

providing a foreign agent for communicating with a mobile node and a home agent;

establishing a forwarding tunnel between the home agent and the mobile node;

10 authenticating the mobile node; and

updating a routing table of the foreign agent to route packets.

23. The method of claim 13, wherein tunneling comprises

15 tunneling packets from a home agent directly to a mobile node.

24. The method of claim 13, wherein tunneling comprises:

intercepting traffic going to a mobile node belonging

20 to an enterprise; and

establishing a tunnel between the mobile node and a network address translation gateway, wherein communications between a mobile node and a communicating party is via the network address translation gateway.

25. A program storage device readable by machine, tangibly
embodying a program of instructions executable by the
machine to perform method steps for vertical handoff in a
5 wireless network, the method steps comprising:

monitoring a wireless local area network signal
carrying an active network connection;

initiating vertical handoff to a wireless wide area
network signal upon determining that the wireless local
10 area network signal is undesirable;

tunneling the active network connection over the
wireless wide area network signal; and

caching and replaying information over the wireless
wide area network signal.

15